

Application No.: 10/733,741

Final Office Action dated: April 3, 2008

Attorney Docket No.: FNE0202US

Remarks/Arguments

Claims 1-9 are pending in the application. Claims 1 and 6 are in independent form.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 4, and 5 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Brandt et al., "Automatic Alignment of Electron Tomography Images Using Markers", Intelligent Robots and Computer Vision XIX, SPIE Preceding Series, Nov. 2000 ("Brandt") in view of US 2003/0100998, Brunner et al. (Brunner).

To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143.01. The Examiner must further articulate some reason or rationale to combine the references as suggested.

Applicants submit that the rejected claims all contain limitations which are not described or taught by the cited references. Further, the rationale suggested by the Examiner as to why a person of ordinary skill in the art would combine the cited references is not reasonable.

Claim 1 states: "applying a fitting algorithm to determine a set of parallel straight lines or very elongate ellipses best fitting the candidate markers in the sole image to identify a third subset of candidate markers." Brunner does not teach this limitation. The Examiner relies on Brunner, paragraph [0276] to show this element, particularly suggesting that a self-organizing map (SOM) is used to fit candidate markers, or in other words, that the SOM nodes of Brunner are analogous to the candidate markers of the present invention. They are not. In Brunner, a mouse is moving in a non-linear, random motion and software tracks the motion of the mouse to determine its behavioral state. For example, large movements will be determined to include

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locomotion, rearing, circling and the like, where small movements may be determined to include sniffing, ear twitching, respiration, tail shakes, etc... Brunner para. [0276]. Bruner uses an outline of an image of a mouse, and fits the image to a self-organizing map (SOM). A SOM uses nodes applied to the outline of the mouse and tracks those nodes in subsequent images to determine movement of the mouse. In contrast, Applicants attempt to locate the same marker in multiple images in a tilt series of images. This is done generally by determining how closely candidate markers resemble a straight line *from one image to the next* as they are projected onto a sole image. The closer a candidate marker-as-projected onto the sole image resembles a straight line, the higher the probability that candidate marker is an actual marker.

Not only is Brunner lacking the limitations of claim 1, but if Applicants were to employ the method of Brunner, it would render Applicants' invention inoperable. Similarly, Brunner's use of Applicants' invention would render Brunner inoperable. Brunner is not looking for a straight line to identify one mouse from among many mice, or one node from many nodes. In fact, Brunner measures the change in location of the nodes from one image to the next to determine movement. If the nodes of Brunner were to form straight or nearly straight lines in subsequent images, Brunner would have no data other than that showing the mouse to be moving in a straight line across its cage, whereas if Applicants' candidate markers were to move randomly from one image to the next, they would be omitted from further calculation and considered false positives.

Further, the Brunner reference is clearly not concerned with the same problem as that solved by Applicants. Applicants are concerned with trying to find the same marker in subsequent images whereas Brunner actually takes for granted that the nodes are locatable in subsequent images. Brennan therefore is not solving the same problem in a different field -- he is solving an unrelated problem and his solution would not apply.

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The Examiner states that "it would have been obvious to a person of ordinary skill in the art to use the fitting algorithm to determine a set of parallel straight lines or very elongate ellipses best fitting in the method of Brandt et al. The suggestion/motivation for doing so would have been that it minimizes the distance between the active pixels and a number of nodes." See p.4 of Office Action and para. [0276] of Brunner. As discussed above, Brunner does not teach the limitation of claim 1 and neither would a skilled person look to Brunner to find the missing elements not taught in Brandt. Further, one of ordinary skill in the art would not have reason to modify Brandt with "minimizing the distance between the active pixels and the number of nodes" as taught by Brunner. That concern is shared by Brunner alone for determining motion of the subject mouse, more clearly seen when he states, in paragraph [0242]: "By detecting the change in active pixels, the system may generate a measure of the motion that is occurring within the field of vision of the visual sensor." Again, Applicant isn't measuring motion of nodes or candidate markers, but the adherence they have to straight or parallel lines or very elongate ellipses.

Claims 2 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brandt in view of Brunner and in further view of Russ, The Image Processing Handbook, CRC press, 1994, pages 495-500. ("Russ"). Claims 2 and 7 are dependent directly or indirectly from claim 1 and are patentable for at least the reasons discussed above with respect to claim 1.

Claims 3 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brandt in view of Ballard, "Generalizing The Hough Transform to Detect Arbitrary Shapes, Pattern Recognition, Vol 13, No 2, page 111-122, (1981) ("Ballard"). Claims 3 and 8 are dependent directly or indirectly from claim 1 and are patentable for at least the reasons discussed above with respect to claim 1.

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Applicants submit that the claims are patentable and respectfully request their reconsideration and allowance.

Allowable Subject Matter

Claim 6 is allowed. Applicants thank the Examiner for his indication of allowable subject matter.

CONCLUSION

Applicants note that the finality of the Office action is improper. Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement. MPEP 706.07 (a). Examiner admits that new grounds of rejection are raised in the Office action and explicitly states, on pg. 2 of the Detailed Action, that "Applicant's arguments filed on 1/4/2008 have been considered but are moot in view of the new ground(s) of rejection." What remains to be determined is whether Applicants have submitted information in an information disclosure statement or have amended the claim such that would necessitate the finality of the Office action.

Applicants have not submitted an information disclosure statement containing the reference cited in the Office action, or, in particular, the Brunner reference. Applicants had amended claims 1 and 6 in response to the previous Office action of 7/05/2007, but not to overcome a rejection or otherwise in a manner that would necessitate a final rejection. A final rejection is properly made when the applicant amends the claims in response to a prior art rejection in the first, or previous, action. If that amendment requires the examiner to perform a new search, and the examiner finds references necessitating a new ground for the rejection of the amended claims, a final rejection would be proper.

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Claim 1 was amended in the previous response to overcome an indefinite rejection under 35 USC 112, and for insufficient antecedent basis. But claim 1 was not amended to overcome a prior art rejection. Claim 1 was sufficiently clear before so the clarifying amendment and the amendment did not change the meaning so as to require a new search. Claim 6 was not rejected over prior art in the previous Office action, and was therefore assumed that the Examiner intended for it to be indicated as patentable if rewritten into independent form and amended to overcome the rejections under 35 USC 112. Therefore, neither did the amendment to Claim 6 necessitate a new ground of rejection that would render a final rejection proper. Applicant's respectfully request that the Examiner withdraw the finality of this Office action, consider this Response, and issue a timely Second or Final Office Action hence, or a Notice of Allowance in this case.

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific objection, issue, or comment does not signify agreement with or concession of the rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Applicant submits that the application is now in condition for allowance and respectfully request reconsideration, withdrawal of all rejections, and allowance of the application.

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Very truly yours,

Date:

8/4/2008

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